

In the Claims

1. (Currently Amended) An isolated and purified protein constituting a mammalian neuronal cationic ASIC channel that is sensitive to amiloride and activated by protons, comprising an amino acid sequence is selected from the group consisting of SEQ ID NO: 2, SEQ ID NO: 4, and SEQ ID NO: 8.

2.-10. (Canceled)

11. (Previously Presented) An isolated and purified nucleic acid molecule comprising the nucleic acid sequence coding for the protein according to claim 1.

12. (Previously Presented) The nucleic acid molecule according to claim 11, comprising the nucleic acid sequence bounded by nucleotides 123 and 1700, inclusive, of the sequence represented in SEQ ID NO: 1.

13. (Previously Presented) The nucleic acid molecule according to claim 11, comprising the nucleic acid sequence bounded by nucleotides 1 and 1542, inclusive, of SEQ ID NO: 3.

14. (Canceled)

15. (Previously Presented) The nucleic acid molecule according to claim 11, comprising the nucleic acid sequence bounded by nucleotides 109 and 1785, inclusive, of SEQ ID NO: 7.

16. (Canceled)

17. (Previously Presented) A vector comprising at least one nucleic acid molecule according to claim 11, combined with control sequences.

18. (Previously Presented) A method for producing a protein according to claim 1 comprising:

- transferring a nucleic acid molecule comprising a nucleic acid sequence encoding the protein or a vector comprising said nucleic acid molecule into a cell host,
- culturing said cell host under conditions allowing production of the protein, and
- isolating the protein.

19. (Previously Presented) A method for expressing a protein according to claim 1 comprising:

- transferring a nucleic acid molecule comprising a nucleic acid sequence encoding the protein or a vector comprising said nucleic acid molecule into a cell host, and
- culturing said cell host under conditions allowing production of the protein.

20. (Previously Presented) The method according to claim 18, wherein the cell host is a bacteria or a eukaryote cell selected from the group consisting of yeasts, mammal cells, plant cells and insect cells.

21. (Previously Presented) A transformed cell expressing the mammalian neuronal cationic ASIC channels obtained by the method according to claim 18.

22. (Previously Presented) A method for screening a substance capable of modulating activity of mammalian neuronal cationic ASIC channels, comprising:

measuring the current of said mammalian neuronal cationic ASIC channel in a transformed cell expressing the mammalian neuronal ASIC cationic channels the amino acid sequence of which is selected from the group consisting of SEQ ID NO: 2, SEQ ID NO: 4 and SEQ ID NO: 8, prior to contacting said substance with the transformed cells;

contacting variable quantities of a substance to be tested with the transformed cells;

measuring changes in current caused by the substance on said mammalian neuronal cationic ASIC channels; and

determining that the substance is capable of modulating activity of the mammalian neuronal cationic channels if the current is different than current measured prior to contacting said substance with said transformed cells.

23. (Previously Presented) The method according to claim 22, wherein said substance is capable of modulating the perception of acidity and affecting nociception and taste transduction.

24.-25. (Canceled)

26. (Previously Presented) The method according to claim 19, wherein the cell host is either a prokaryote or an eukaryote selected from the group consisting of bacteria, yeasts, mammals, plants and insects.

27. (Previously Presented) A transformed cell expressing the mammalian neuronal amiloride-sensitive proton-activated cationic ASIC channels obtained by the method of claim 19.

28-29. (Canceled)

30. (Currently Amended) The isolated and purified protein according to claim 1 comprising an amino acid sequence selected ~~in~~ from the group consisting of SEQ ID NO:2 and SEQ ID NO:8.

31. (Currently Amended) The method according to claim 22, wherein the transformed cell expresses the mammalian neuronal ASIC cationic channels having the amino acid sequence ~~of which is selected from the group consisting~~ of SEQ ID NO:2 and or SEQ ID NO:8.